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ABSTRACT

Adolescent sexual activity and the resulting pregnancy and transmission of sexually transmitted diseases have been on the rise during the past several decades. This chapter addresses each of the three objectives regarding sexual behavior outlined in the Healthy People 2000 initiative. Background data and trends in adolescent sexual behavior are addressed for each of the three target areas: early sex, adolescent pregnancy, and contraceptive use. The chapter presents a discussion of prevention efforts aimed at reducing high-risk sexual behavior, highlighting both limitations and strengths of existing programs. The chapter also raises methodological, developmental, and contextual considerations, and describes four programs that have dealt effectively with such issues. Primary prevention efforts that are designed to reduce early initiation of sexual behavior and secondary prevention efforts that are designed to promote safer sex practices among sexually active adolescents are distinguished. Finally, the chapter presents recommendations for improving preventive interventions and thus reducing high-risk sexual behavior among America's youth, including the following: (1) prevention efforts must focus on reducing sexual risk taking through primary prevention; and (2) primary prevention is not sufficient to reduce sexual risk taking--secondary prevention efforts are also needed to ensure that sexually active adolescents are engaging in safe sexual practices. (Contains 97 references.) (SD)

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Preventing High-Risk Sexual Behavior, Sexually Transmitted Diseases, and Pregnancy Among Adolescents

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Adolescent sexual activity and the resulting pregnancy and transmission of sexually transmitted diseases (STDs) have been on the rise during the past several decades, with large increases in the 1980s and early 1990s (Moore, Sugland, Blumenthal, Glei, & Snyder, 1995). In an effort to promote the health of America's youth, the U.S. Department of Health and Human Services, Public Health Service (DHHS; 1991) established goals for healthy behavior change, including goals for reducing teen pregnancy and STD transmission. These guidelines were clear with respect to adolescent sexual behavior: (a) Reduce early sexual behavior, (b) reduce adolescent pregnancy, and (c) increase adoles-

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cent use of contraceptives for pregnancy and STD/HIV prevention. At the midcourse review, however, these goals had only partially been reached (DHHS, 1995). Specifically, national surveys reveal that since *Healthy People 2000* (DHHS, 1991) was released, the proportion of sexually active adolescents has increased, sexual initiation is occurring at younger ages, and the rates of adolescent pregnancy have increased, especially among minority youth. Among adolescents who have been sexually active in their lifetime, however, the proportion of adolescents who later choose abstinence and who use contraceptives has increased (DHHS, 1995).

In addition to the objectives outlined above, *Healthy People 2000* (DHHS, 1991) identified minority youth as a group at high risk for unintended pregnancy, early sexual behavior, and sexually transmitted diseases, and thus targeted minority youth for risk reduction programs. Urban minority youth pose a particularly important area of concern because urban minority adolescents are overrepresented among adolescents at risk for exposure to STDs and HIV (Centers for Disease Control and Prevention [CDC], 1995; Parfenoff, Paikoff, Brooks-Gunn, Holmbeck, & Jarrett, 1995). Children growing up in urban settings are more likely than suburban youth to be living in poverty and to experience increased stress due to growing up in such contexts (Jarrett, 1995; McLoyd, 1990). The impact of this context also may have short- and long-term effects on the negotiation of healthy behavior and the prevention of sexual risk taking. Little is known about the normative behavior of urban minority youth living in poverty. Much of the research conducted on normative development has focused on middle-class White children growing up in suburban areas, whereas research on urban minority youth has focused on problem behavior (Paikoff, 1995; Spencer & Dornbusch, 1990). More recently, however, urban minority youth are the focus of primary preventive interventions designed to prevent pregnancy and HIV, with data relevant to normative behavior embedded in these contexts (Paikoff, 1995). The development of more effective programming would likely benefit substantially from more baseline information on the normative development of sexuality in urban and minority youth.

In this chapter, we will address each of the three objectives regarding sexual behavior outlined in *Healthy People 2000* (DHHS, 1991). We will first consider background data and trends in adoles-

cent sexual behavior for each of the three target areas (early sex, adolescent pregnancy, and contraceptive use). Second, we will discuss prevention efforts aimed at reducing high-risk sexual behavior, highlighting both limitations and strengths of existing programs. Specifically, we will distinguish between primary prevention efforts that are designed to reduce early initiation of sexual behavior and secondary prevention efforts that are designed to promote safer sex practices among sexually active adolescents. Finally, we will make recommendations for improving preventive interventions and thus reducing high-risk sexual behavior among America's youth.

Trends in Adolescent Sexual Behavior

Early Initiation of Sexual Behavior

One objective of *Healthy People 2000* (DHHS, 1991) is to reduce early sexual behavior through delaying onset of sexual intercourse and encouraging abstinence. More specifically, the guidelines specified reducing the proportion of adolescents who have engaged in sexual intercourse to 15% by age 15 and to 40% by age 17, and increasing to 40% the proportion of ever sexually active adolescents age 17 and younger who have abstained in the past 3 months. Midcourse revisions called for a focus on ages 15 through 17 and, in particular, on African American boys and girls (Fleming, 1996). According to the 1988 baseline statistics, 27% of girls and 33% of boys were sexually active by age 15, and 50% of girls and 66% of boys were active by age 17 (DHHS, 1991). Data from a 1990 national survey (Leigh, Morrison, Trocki, & Temple, 1994), 1991 statistics provided in the midcourse review (DHHS, 1995), and the 1993 Youth Risk Behavior Surveillance (YRBS; Kann et al., 1995) indicate even higher percentages of youth are active by these ages, and African American youth were more likely to report being active than were White or Hispanic youth (Kann et al., 1995; Leigh et al., 1994). Furthermore, research indicates that African American youth become sexually active at younger ages than their White

counterparts, and boys at younger ages than girls (Brooks-Gunn & Furstenberg, 1989; Hayes, 1987; Keller et al., 1991). One multicultural sample indicated that African Americans reported earliest onset, followed by Hispanics, Whites, and Asians (Moore & Erickson, 1985). These gaps are narrowing, however, as White youth and girls become active at younger ages (Brooks-Gunn & Furstenberg, 1989; Hayes, 1987). Studies of urban minority youth indicate that the median age of onset of sexual activity may be as low as 12 to 14 (Keller et al., 1991; Levy, Handler, Weeks, et al., 1995; Levy, Lampman, Handler, Flay, & Weeks, 1993; Stanton et al., 1994).

Earlier onset of sexual behavior places adolescents at higher risk for pregnancy and sexually transmitted diseases; earlier initiation increases the probability of pregnancy and STDs because of the increased period in which an adolescent is engaged in sexual activity, and increased number of lifetime partners (Brooks-Gunn & Furstenberg, 1989). In addition, research indicates that young adolescent girls are likely to be having sex with older boys and men (Males & Chew, 1996), which places them at higher risk for STDs and HIV. Older adolescents and young men are more likely to have had exposure to multiple partners and intravenous drug use (Hein, 1989), and having sex with a partner more than 5 years older is associated with not using condoms (Weisman et al., 1989).

Adolescent Pregnancy

The second objective set out by *Healthy People 2000* (DHHS, 1991) was to reduce early pregnancies among girls aged 17 and younger to no more than 50 per 1,000 adolescents. Baseline data from 1985 indicated an overall rate of 71.1 per 1,000. By 1990, pregnancy rates had increased to 74.3 (DHHS, 1995). The birthrate decreased between 1991 and 1993, however, to 59.6 (Children's Defense Fund, 1996). The guidelines also targeted reducing adolescent pregnancies in African American and Hispanic adolescents aged 15 to 19 to 120 and 105 per 1,000, respectively, on the basis of baseline data of 186 and 158. The midcourse review reported increased pregnancy rates in African American girls aged 15 to 17 from 134 to 140 per 1,000 between 1985 and 1988 (no data were presented for changes in Hispanic birthrates). The baseline statistics reflect the number of pregnancies per 1,000 adolescents, including

those who are not currently sexually active. Among sexually experienced adolescents only, the numbers are obviously higher. On the basis of 1990 data (Alan Guttmacher Institute, 1994), among sexually experienced teenagers, 9% of 14-year-olds, 18% of 15- to 17-year-olds, and 22% of 18- to 19-year-olds become pregnant each year, which reflects both higher rates of reproductive maturity (fecundity) and higher frequency of intercourse in older teens. Furthermore, among adolescents aged 15 to 19, 19% of African American, 13% of Hispanic, and 8% of White teens become pregnant each year. These ethnic differences reflect differences in rates of sexual experience among ethnic groups.

The rates of adolescent pregnancy in the United States are much higher than rates in other developed countries, despite similar rates of adolescent sexual activity. This difference has been attributed to greater acceptance of adolescent sexuality in other countries, resulting in more effective education and use of contraception (Jones, Forrest, Henshaw, Silverman, & Torres, 1988), and suggests that increased education and availability of birth control could decrease the pregnancy rate in this country, to the extent that this reflects a larger cultural shift.

Although most data on adolescent pregnancy have been collected on women, from the perspective of prevention it is critical to consider adolescent fathers as well. National studies find that the partners of pregnant teens, that is, the babies' fathers, are 5 years older on average than the mothers (Males & Chew, 1996). For pregnancies in young women under age 18, only 26% of the fathers are under age 18, whereas 35% are 18 to 19, and 39% are 20 and older (Alan Guttmacher Institute, 1994; Henshaw, 1992). In terms of pregnancy rates, only 4% of sexually experienced adolescent males aged 15 to 17 impregnate their partners, compared with the female pregnancy rate of 18% for this age range (Alan Guttmacher Institute, 1994; Henshaw, 1992; Sonenstein, Pleck, & Ku, 1989). This suggests that adolescent boys may be having sex with younger girls who have not yet reached reproductive maturity, older girls who "initiate" them, or that they may not be having sex as frequently as their female peers (Alan Guttmacher Institute, 1994).

The resolution of teenage pregnancies depends in part on whether the pregnancy was intended. Approximately 85% of teenage pregnancies are unintended; intention, however, is influenced by

socioeconomic status, race/ethnicity, and marital status. Higher-income teens are less likely to intend to become pregnant than lower-income teens, and African American and White teens are less likely to intend to become pregnant than Hispanic teens (although the majority of Hispanic teens also do not intend to get pregnant). Among married pregnant teens, most did not intend to become pregnant (67%; Alan Guttmacher Institute, 1994; Henshaw, 1992).

When pregnancies do occur, they are resolved through miscarriages (14%), abortion (35%), or giving birth (50%). Among adolescents who give birth, 14% of pregnancies were intended, and 37% were unintended. Among White teens giving birth following an unintended pregnancy, the adoption rate has declined substantially to a rate of 3% in the late 1980s. This trend reflects, in part, the increased acceptability of teens having children outside marriage (Bachrach, Stolley, & London, 1992; Henshaw, 1992).

The outcomes associated with adolescent pregnancy are variable and can be seen in both the short and the long term. In general, teenage pregnancy and childbearing result in increased health and developmental risks to the offspring (Ketterlinus, Henderson, & Lamb, 1990; Rosenthal, 1993), interruption or discontinuation of the teenager's education (Upchurch & McCarthy, 1990), reduced employment opportunities (Hayes, 1987; Hofferth & Moore, 1979), and unstable or nonexistent marriages. These outcomes, however, are highly associated with the level of poverty and lack of adequate health care experienced by many pregnant adolescents (Hayes, 1987). Furthermore, in the long term, many pregnant adolescents return to school, and by 10 years postpregnancy, differences in educational attainment and workplace participation are reduced (Furstenberg & Brooks-Gunn, 1985). Finally, the outcomes associated with adolescent pregnancy likely emotionally affect the lives of the adolescents, their families, and their extended social networks, although the emotional ramifications of adolescent pregnancy have not been well researched.

Contraceptive Use

The third objective set out by *Healthy People 2000* (DHHS, 1991) was to increase to at least 90% the proportion of sexually

active, unmarried people aged 19 and younger who use contraception. In particular, combined methods of contraception that effectively prevent pregnancy and provide barrier protection against sexually transmitted diseases are preferred. According to 1988 baseline reports, 78% of youth used contraceptives at most recent intercourse, and 63% at first intercourse. Only 2% of women aged 15 to 19 used both oral contraceptives and condoms at most recent intercourse. Furthermore, only one third of youth report using contraceptives all the time, and low-income teens are the least likely to use contraceptives consistently (DHHS, 1991). In 1991, reported contraceptive use at last intercourse had increased to more than 80% (DHHS, 1995). Only 52.8% of students surveyed in the 1993 YRBS, however, reported using condoms at last intercourse (Kann et al., 1995).

Reported rates of condom use among urban minority youth vary considerably, depending on how the question is asked. Most frequently, researchers ask about most recent intercourse or intercourse within the past 6 to 12 months. Results indicate that 30% to 60% of African American and Hispanic adolescents report using condoms (Kegeles, Adler, & Irwin, 1988; Millstein, Moscicki, & Broering, 1994; Stanton et al., 1994; St. Lawrence, 1993), with inner-city youth reporting lower rates of use than national samples (Ford, Rubinstein, & Norris, 1994). When asked if they always use condoms, smaller percentages (2% to 37%) report consistent use of condoms (DiClemente et al., 1992; Kegeles et al., 1988; Keller et al., 1991; Millstein et al., 1994). When asked about intentions to use condoms in the future, 60% to 70% of sexually active youth report that they plan to use condoms (Stanton et al., 1994; Walter, Vaughan, Ragin, Cohall, & Kasen, 1994).

Results of comparisons of condom use among inner-city ethnic groups are mixed (CDC, 1992; Durant, Seymore, Pendergrast, & Beckman, 1990; Ford et al., 1994; Levy, Handler, et al., 1995). Females report using contraceptives more than do males (Moore & Erickson, 1985), but males report using condoms more than do females (CDC, 1992; DiClemente, 1992). This may reflect women's use of birth control pills or other female methods without the knowledge of their partners. Age comparisons yield mixed results, with some studies indicating that older adolescents are more likely to use contraceptives, including condoms, than are

younger adolescents (Moore & Erickson, 1985; Levy, Handler, et al., 1995), whereas others conclude either that age differences do not exist (DiClemente et al., 1992) or that younger adolescents are more likely to use contraceptives (DiClemente, 1992).

Interventions Designed to Reduce Early Sexual Behavior, Adolescent Pregnancy, and Unprotected Sexual Intercourse

During the past several decades, many programs have been designed to reduce early sexual behavior, adolescent pregnancy, and unprotected sexual intercourse. Interventions range from comprehensive, multifaceted programs that focus on multiple goals to enhance life options (including delaying parenting), to targeted programs that focus specifically on adolescent sexual behavior (Dryfoos, 1990). Programs take place in a variety of settings, including schools, churches, family planning clinics, and the larger community (Dryfoos, 1990; Miller, Card, Paikoff, & Peterson, 1992). Although earlier programs were aimed at reducing adolescent pregnancy, often through abstinence, the rise of the AIDS epidemic has changed the nature of programming. The newest generation of programs emphasize delaying sexual debut, and for those who are sexually active, practicing effective contraception to prevent both pregnancy and the transmission of STDs (Kirby, Barth, Leland, & Fetro, 1991; Kirby & DiClemente, 1994).

Broad-based programs represent a more sociological approach to prevention in which pregnancy and other risky behaviors (e.g., substance use, school dropout, and delinquency) are seen as embedded in problematic contexts that require comprehensive treatment. Programs are designed to meet multiple goals through changing the social environment. By enhancing opportunities for a positive future, the programs aim to provide impetus to delay parenting (Dryfoos, 1990). Programs include skills training in areas such as academic achievement (Jollah & Alston, 1988; Sipe, Grossman, & Milliner, 1988), life planning and goal setting (Philliber & Allen, 1992), career planning (Hunter-Geboy, Peterson, Casey, Hardy, & Renner, 1985; Jollah & Alston, 1988), and job placement (Jollah & Alston, 1988; Sipe et al., 1988). In addition, many programs

include personal counseling (Philliber & Allen, 1992; Sipe et al., 1988), family communication (Nicholson & Postrado, 1992), and sexual and reproductive development and decision making (Jollah & Alston, 1988; Sipe et al., 1988).

Evaluations of such programs are not always comprehensive or rigorous by research standards (Card, Peterson, & Greeno, 1992; Dryfoos, 1990; Kelly, Murphy, Sikkema, & Kalichman, 1993; Moore et al., 1995; Oakley, Fullerton, & Holland, 1995; Zabin & Hirsch, 1987), in part because their broad-based approach does not allow for targeted programming subject to targeted evaluation and in part because the outcomes of such programming are also broad based and longer term. Such programs, however, have been found to reduce the rate of teen pregnancy (Berrueta-Clement, Schweinhart, Barnett, Weikart, & Epstein, 1984; Jollah & Alston, 1988; Nicholson & Postrado, 1992; Philliber & Allen, 1992) and increase the effective use of contraception (Jollah & Alston, 1988; Nicholson & Postrado, 1992; Sipe et al., 1988).

In contrast to the broad-based, life options programs, targeted programs focus primarily on sexual behavior and on changing the individual factors presumed to be linked to sexual behavior. Targeted programs include school-based interventions and sex education, counseling programs, school-based clinics, and multicomponent community-based programs. Programs usually provide information and knowledge, as well as training to increase problem-solving, decision-making, and behavioral skills (Howard & McCabe, 1992; Kirby et al., 1991; Levy et al., 1994; Levy, Perhats, et al., 1995; Pittman & Govan, 1986; Schinke & Gilchrist, 1984; St. Lawrence et al., 1995; Walter & Vaughan, 1993). Various formats are used, including small group discussions (Stern, 1988), individual counseling (Stern, 1988; Zabin, Hirsch, Smith, Streett, & Hardy, 1986), role playing (Schinke & Gilchrist, 1984), and provision of family planning services in a clinic setting (Edwards, Steinman, Arnold, & Hakanson, 1980; Galavotti & Lovick, 1989; Zabin et al., 1986).

Programs report change in the areas of increased knowledge and positive attitudes (Jemmott, Jemmott, & Fong, 1992; Stern, 1988; Walter & Vaughan, 1993), postponing the onset of sexual intercourse (Howard & McCabe, 1992; Pittman & Govan, 1986; Zabin et al., 1986); increased intentions to use condoms (Jemmott et al., 1992; Levy, Perhats, et al., 1995), increased use of contraception

(Galavotti & Lovick, 1989; Stern, 1988; St. Lawrence et al., 1995; Zabin et al., 1986), fewer partners (Jemmott et al., 1992), and decreased pregnancy rates (Zabin et al., 1986).

Methodological Considerations: Program Evaluation, Developmental Appropriateness, and Contextual Appropriateness

Program Evaluation

Although many interventions have been shown to be effective in changing behavior, at least in the short term, serious methodological constraints need to be considered. Recent reviews of behavioral interventions to prevent pregnancy and HIV reveal that few programs are methodologically strong enough to generate reliable conclusions concerning effectiveness (Moore et al., 1995; Oakley et al., 1995). Oakley et al. identified core criteria, including using control groups, providing pre- and postintervention data, and reporting on all targeted outcomes, and found only nine adolescent HIV prevention interventions that met such standards. Of those nine, four were judged to be effective. Oakley et al. call for the increased use of randomized trials, increased reporting of the intervention's impact on health outcomes, and raising journal publication standards to meet more stringent methodological criteria.

Similarly, Moore et al. (1995) note that programs often do not demonstrate significant impact because of weak programming, weak evaluation, or both. Their comprehensive evaluation of pregnancy prevention programs led them to conclude that programs need to be grounded in theory, ecologically sound, and multicomponent oriented. Furthermore, they outline essential steps in designing a program, including defining the purpose, setting clear and attainable goals, identifying the target population, specifying the nature of the treatment, systematically documenting service delivery, establishing the duration of the study and follow-ups, collaborating with program implementers during the design phase, and using control groups.

Developmental Appropriateness

Although improvements in methodological and evaluative aspects of interventions are necessary, they are insufficient to increase the effectiveness of interventions. Programs must also be designed to fit the developmental maturity of the target population. The transition to adolescence is marked by changes in multiple domains, including biological, cognitive, and emotional maturation; family communication; and peer influence. The developmental challenges associated with each of these domains may have important implications for early sexual behavior. Indeed, research indicates that the correlates of early sexual behavior include complex interrelations among individual and contextual factors (Brooks-Gunn & Paikoff, 1993; Chase-Lansdale & Brooks-Gunn, in press), and given the complex relations among these factors, the task of behavior change is a complicated problem likely requiring multifaceted approaches.

For example, the timing of pubertal development (early, on-time, or late with respect to peers) is associated with the timing of onset of sexual behavior, with earlier-developing boys and girls initiating sexual activity earlier than later maturers (Stattin & Magnusson, 1990; Zabin et al., 1986). Research indicates that early-maturing girls may begin sexual activity earlier, in part because of their increased social ties with older girls, linking them to interactions with older boys and men (Hofferth & Hayes, 1987; Irwin, Shafer, & Millstein, 1985). From a social cognitive development perspective, however, early-maturing adolescents may not have the skills needed to understand and make decisions about sexual behavior because they may not yet systematically consider abstract or hypothetical events related to intimate relationships or risk taking (Brooks-Gunn, Boyer, & Hein, 1988; Brooks-Gunn & Paikoff, 1993; Chase-Lansdale & Brooks-Gunn, in press; Fischoff, Bostrom, & Quadrel, 1993; Furby & Beyth-Marom, 1992).

Furthermore, large numbers of adolescents experience emotional difficulties such as depression, low self-esteem, negative self-image, and substance abuse, which have implications for early sexual behavior. As such, interventions must be designed to help adolescents, and in particular, early-developing adolescents, manage risk while also being sensitive to cognitive and emotional developmental issues (Brooks-Gunn & Paikoff, 1993). Ideally, adolescents

would be provided not only with sufficient knowledge and understanding of the problem but also with the skills and capacity to act on the knowledge when confronted with a risky situation (Schinke & Gilchrist, 1984).

The transition to adolescence is also accompanied by developmental changes in family and peer relationships that influence the onset of sexual behavior. Adolescents place increasing importance on peer relationships (Brown, 1990), and younger adolescents may be more susceptible to peer pressure than older adolescents (Hill & Holmbeck, 1986; Lewis & Lewis, 1984). Perhaps the greatest source of adolescents' information about sex comes from peers (Hayes, 1987; Thornburg, 1978), allowing for a great deal of misinformation (Brooks-Gunn & Paikoff, 1993). Furthermore, adolescent perceptions of peer attitudes and behavior may not be accurate; these perceptions, however, predict individual sexual behavior (Fisher, 1988).

Communication with parents regarding sexuality also influences sexual behavior, although little is known about the process in which parents influence their teenagers' sexual attitudes and behavior (Brooks-Gunn & Furstenberg, 1989; Brooks-Gunn & Paikoff, 1993). Recent research indicates that adolescents who report discussing sexuality with their parents, including how pregnancy occurs, birth control, and protection from STDs, are more likely to attempt to avoid AIDS through using condoms and having fewer partners (Leland & Barth, 1993). Teenagers who perceive their communication with their parents as poor, however, are likely to initiate sex earlier than those who do not (Christopherson, Miller, & Norton, 1994; Jessor & Jessor, 1977). Perceptions of a close relationship with parents, including feelings of connectedness and supportiveness, have been associated with later intercourse and use of contraceptives (Inazu & Fox, 1980; Leland & Barth, 1993), as have consistency of values between parents and adolescents (Christopherson et al., 1994; Jessor & Jessor, 1977). As such, family communication is an important area for intervention, especially in light of the changing nature of the parent-child relationship at this point in development. More specifically, the transition to adolescence is accompanied by child attempts to increase autonomy, and parental attempts at supervising and monitoring their children become more difficult. Yet increased monitoring may be necessary because it has been linked to later initiation of sexual

behavior (Newcomer & Udry, 1985; Paikoff, 1995; Steinberg, 1990) by limiting children's experiences in private, unsupervised, mixed-sex groups (Paikoff, 1995). Working with parents to increase positive communication while effectively monitoring their children could be one aspect of a multicomponent intervention approach.

Contextual Appropriateness

Preventionists also need to consider the effects of contextual factors such as ethnicity, socioeconomic status, and the community because the correlates and patterns of early sexual behavior may differ among different groups. Specifically, differences in cultural and community values and norms, as well as available financial resources, may result in differentially socializing environments. For example, characteristics of the community such as poverty and high proportions of single-parent households are associated with early sexual behavior and adolescent pregnancy (Chase-Lansdale & Brooks-Gunn, in press; McCormick & Brooks-Gunn, 1989). For many adolescents growing up in contexts of urban poverty, pregnancy may be seen as acceptable and in keeping with community age norms for behavior. In addition, parents may want to protect their children from early pregnancy and HIV but, in the context of urban poverty, may not perceive themselves as efficacious in changing their children's behavior. As such, interventions must be designed with sensitivity to contextual factors. A particularly intriguing and worrisome issue to be faced by those designing interventions aimed at reducing high-risk sexual behavior is how best to structure programs for a context that is developmentally inappropriate (e.g., filled with risks and dangers to be negotiated that are beyond the abilities of children or young adolescents).

Primary Versus Secondary Prevention

Similar to other developmental transitions, the development of sexuality can be seen as a series of transitions, and interventions can be designed to target different stages of the sexual transition (Moore et al., 1995). For example, an intervention designed to delay the onset of sexual intercourse (primary prevention) would be different from an intervention designed to increase the use of contraception (secondary prevention). *Primary prevention,* as de-

fined by the Institute of Medicine Committee on Prevention of Mental Disorders (Mrazek & Haggerty, 1994), "seeks to decrease the number of new cases of a disorder or illness (incidence)" (p. 20). Within the context of sexual risk behavior, primary prevention refers to delaying the initiation of sexual behavior among adolescents who have not yet had sexual intercourse. In contrast, *secondary prevention* "seeks to lower the rate of established cases of the disorder or illness in the population (prevalence)" (p. 20). With respect to sexual risk behavior, secondary prevention refers to reducing sexual risk taking among sexually active adolescents, including encouraging abstinence, reducing number of partners, and using effective contraception. Therefore, although both primary and secondary preventive programs have the goal of reducing adolescent pregnancy and STDs through reducing sexual risk taking, the curriculum used for each type of program should differ substantially. Unfortunately, most interventions do not make this distinction, instead including both primary and secondary preventive measures with all participants, regardless of their sexual experience.

Attending to the distinction between primary and secondary prevention facilitates the process of designing a developmentally sensitive intervention by reducing the types of issues to be addressed and restricting the age range and experience of the targeted participants. Next, we describe four programs that attend to the methodological and developmental issues raised in this section, within the context of primary or secondary prevention.

Primary Prevention Programs

Because of the young age at which adolescents are initiating sexual behavior, primary preventive interventions must target *preadolescents*. As mentioned above, programs targeting preadolescents must be sensitive to their level of developmental maturity, as well as the contextual and cultural needs of the target population. Preadolescents, in particular, may not have the developmental maturity to understand the long-term implications of their sexual behavior, and therefore curriculums must be designed with much attention to the cognitive level at which the program is pitched. Furthermore, such programs can help preadolescents identify risk situations and learn to manage them *before* being confronted by

them (Brooks-Gunn & Paikoff, 1993), thus heading off the process of behavior change.

Two examples of primary preventive interventions that are methodologically rigorous and developmentally sensitive are the Postponing Sexual Involvement Program (PSIP; Howard & McCabe, 1990, 1992) and Teen Outreach (Philliber & Allen, 1992). The PSIP is a targeted intervention designed to provide information and decision-making skills to help 8th graders resist peer pressure to have sex. The program is a hospital-based outreach educational program implemented in the public school system in Atlanta. Participants in the program are low-income African American boys and girls in the 8th grade (age 13 to 14). Youth are assigned to the program or a comparison group by school. Students in the comparison school receive a basic sexuality education program. Pretest data indicate that the treatment groups do not differ. Follow-up data are collected by telephone interview through the 12th grade (5 years), including students who have dropped out of school, and medical records are used to verify reported pregnancies (Howard & McCabe, 1990, 1992; Moore et al., 1995).

The program has two components. The first component, Human Sexuality, is a 5-class-period curriculum designed to provide basic factual information, decision-making skills, and information about proper use of contraceptives. This component is administered by nurses and counselors. The second component, Postponing Sexual Involvement, is designed to build on the first component by building skills to deal with social and peer pressures to engage in sexual behavior (Howard & McCabe, 1990, 1992). More specifically, this component is designed to help young people (a) understand the societal pressures that influence teen sexual behavior, (b) learn where to go for information regarding sexuality, (c) understand their personal rights in relationships, (d) deal assertively with pressure situations, and (e) postpone sexual involvement (Howard & Mitchell, 1990). This component is presented by older teen leaders in 11th and 12th grades, who serve as role models and illustrate that teens who postpone sexual involvement can still be admired leaders in their peer group. The teen leaders are trained and supervised by nurses and counselors.

Program evaluation results indicate that students in the combined 10-session program were significantly more likely to postpone sexual involvement than students not in the program. For those

youth who did initiate sex during the program year, students in the program reported having sex fewer times and being more likely to use contraceptives than those not in the program, which was reflected in their decreased rate of pregnancy relative to controls. Among those youth sexually active prior to the program, however, there were no changes in sexual involvement or pregnancy rates (Howard & McCabe, 1990, 1992).

The second primary prevention program, Teen Outreach (Allen, Philliber, & Hoggson, 1990; Philliber & Allen, 1992), is a school-based program designed to promote school progress and prevent pregnancy by promoting other life options. The program has been implemented nationally, and although certain aspects remain similar across sites, other aspects are more variable. Participants in Teen Outreach are students in 7th through 12th grade, ranging in age from 11 to 19. Nationwide, 75% of participants are women, 40% are African American, 40% are White, and 13% are Hispanic. Some sites recruit through announcements and posters, whereas others seek out students identified by school counselors as "high risk" for school dropout or pregnancy. Matched comparison groups are recruited through participants and school counselors, and both participants and controls complete pretest evaluations as well as follow-ups conducted at the end of the 9-month program. Recently, the program was implemented at 25 sites using random assignment to allow for experimental evaluation of outcomes. The similar findings of the experimental trial suggest that the nonrandom sampling procedure does not bias program outcome evaluation (Allen, Philliber, Herrling, & Kuperminc, 1996).

The program includes two main components: (a) weekly small group discussions led by a facilitator and (b) community service volunteering (Philliber & Allen, 1992). The small group discussions meet at least once weekly for 1 hour. The curriculum emphasizes life planning and goal setting through discussion of developmental tasks faced by adolescents, such as understanding themselves and their values, communication skills, human growth and development, issues related to parenting, family relationships, and community resources. The facilitators serve not as teachers but as friends and mentors, creating a support group-like environment. The community service volunteering projects, usually coordinated by the Junior League, vary according to the needs of the area and the ages of the participants. Typical service projects include working in

hospitals and nursing homes, participating in walkathons, working at the school, and tutoring younger students. Students perform a minimum of 1 hour per week of community service volunteering.

The Teen Outreach program was evaluated on four dimensions: pregnancy, school suspension, course failure, and school dropout (Philliber & Allen, 1992). Analyses during several program years indicate that students in the program had lower pregnancy rates and lower rates of school dropout than did the comparison students. With respect to school suspension and course failure, program participants in 4 of the 5 years had lower rates than did control students. Furthermore, participation in Teen Outreach was related to not getting arrested, having reduced rates of truancy, getting on the honor roll, and using contraception more consistently. Teen Outreach participation was not significantly related to reducing substance use or increasing aspirations to finish high school, however, although a trend in this direction was detected for both outcomes.

In-depth analyses examining the process by which the program effects change indicate that two components of Teen Outreach, the classroom program promotion of autonomy and relatedness and the quality of volunteer work performed, predicted lower levels of problem behaviors in middle school students but not in high school students. This suggests that the autonomy component of the classroom program and volunteer work are developmentally appropriate for middle school students, but aspects of the program that best affect outcomes for high school students are not captured by these program components or evaluation measures. Further research is needed to identify the process by which the program effects change for high school students (Allen, Kuperminc, Philliber, & Herre, 1994), or if the primary prevention battle is not already "lost" at this later age.

Secondary Prevention Programs

Although primary prevention efforts show promising outcomes, many adolescents will still become involved in sexual activity. Therefore, secondary prevention programs, designed to reduce sexual risk taking among sexually active adolescents, are also needed. Secondary prevention programs recognize that many adolescents are sexually active and that rather than stressing abstinence

as the only solution to preventing pregnancy and STDs, sexually active adolescents need skills with which to manage their sexuality safely, within the context of their level of developmental maturity. For example, a program that emphasizes the use of birth control pills or Norplant as a means of reducing pregnancy may be counterproductive to the prevention of STDs through condom use because adolescents may be less able to appreciate the immediacy of the risk of STDs and therefore may be less likely to use condoms. Two examples of secondary preventive interventions that are methodologically sound and developmentally sensitive are Reducing the Risk (Barth, Leland, Kirby, & Fetro, 1992; Kirby et al., 1991) and Be Proud, Be Responsible (Jemmott et al., 1992).

Reducing the Risk is a targeted sexuality education curriculum that uses a social and cognitive approach to prevent pregnancy by increasing resistance to social pressures and encouraging parental discussions of abstinence, pregnancy, and STDs (Barth et al., 1992; Kirby et al., 1991). The 15-class-period, 3-week program was implemented by specially trained high school teachers as part of the 10th-grade health education course in 13 schools in California. Classrooms were randomly assigned to either the Reducing the Risk curriculum or the control curriculum (i.e., the sex education already offered by the school). All participants and controls completed pre- and posttest evaluations, as well as follow-ups at 6 and 18 months. Through peer modeling and role playing, the program, based on social learning theory, social inoculation theory, and cognitive behavior theory, stressed increasing knowledge about pregnancy and contraception, efficacy of contraception and one's ability to use it, and the anticipated benefits of avoiding pregnancy. Through role playing, the students become familiar with various forms of social pressure and build cognitive and behavior skills rendering them better able to resist such pressures. Explicit norms against unprotected sexual intercourse are established and reinforced through such role playing. Students are also given assignments in which they practice certain skills, such as buying condoms or discussing sex with parents.

Evaluation of outcomes indicated that students in the program were less likely to initiate sexual intercourse within the 18-month follow-up than were controls. Among those who did initiate intercourse during the follow-up, students in the intervention condition were more likely to have protected intercourse than those in the

control condition. Furthermore, among already sexually active students in the intervention condition, lower-risk students and females were more likely to have protected intercourse than higher-risk students and males. Students in the intervention condition were more likely to discuss abstinence and birth control than were students in the control group. Discussions of pregnancy were increased for females in the intervention condition, and discussions of STDs were not increased for any group.

A second example of a secondary prevention program, Be Proud, Be Responsible, is an intervention designed to reduce the frequency of HIV-risk-associated sexual behaviors among inner-city African American adolescent males in Philadelphia (Jemmott et al., 1992). Participants in this targeted intervention were either recruited from an outpatient medical clinic, students participating in 10th- through 12th-grade assemblies at a high school, or adolescents at a YMCA. Most of the participants were still in school, and their major source of risk for HIV was through heterosexual activities. Participants were randomly assigned to either the AIDS risk reduction intervention or to a control (career opportunities intervention). All participants completed pre- and posttests on the day of the intervention, as well as a 3-month follow-up. The AIDS intervention was a 1-day, 5-hour program designed to increase knowledge about HIV/AIDS and to change attitudes toward risky sexual behavior. Information was provided concerning the risks associated with specific sexual activities via videotapes, games, and small group exercises that were culturally (i.e., videotapes had multiethnic casts) and developmentally appropriate and encouraged active participation. The correct use of condoms was demonstrated, and participants practiced role-playing situations in which they implemented safer sex practices including abstinence and condom use. Evaluation of outcomes indicated that 3 months following the intervention, participants in the AIDS condition reported more AIDS knowledge and stronger intentions to avoid risky sexual behavior in the next 3 months than participants in the control condition. In addition, they reported engaging in less risky behavior in the 3 months following the intervention, including having sexual intercourse on fewer occasions, with fewer partners, and with fewer partners who were also having sexual relations with others. Furthermore, they were less likely to have intercourse without a condom and less likely to have anal intercourse with a woman.

These short-term gains, however, have not been assessed in longitudinal follow-ups.

Recommendations for Designing Interventions to Reduce Early Sexual Behavior, Adolescent Pregnancy, and Unprotected Sexual Intercourse

In this chapter, we have reviewed current trends in adolescent sexual behavior as well as approaches to preventive interventions. Methodological, developmental, and contextual considerations were raised, and four programs that dealt effectively with such issues were described. In the last section, we outline our recommendations, based on the literature and our own experiences, for designing preventive interventions. Within this context, we note the strengths of the programs described above with respect to these issues.

First, interventions based on empirical research are better able to address the issues most relevant to the target population (Kirby & DiClemente, 1994). Interventions designed for adolescents should be designed for the developmental level of the target group, which may mean different approaches for preadolescents, early adolescents, and late adolescents. Early interventions, with children as young as 9 to 10 years of age, will best facilitate primary prevention of adolescent pregnancy and HIV through a focus on delaying the onset of sexual behavior (Choi & Coates, 1994). Thus far, none have really done this with the preadolescent age group. Both Teen Outreach and PSIP focus on abstinence within a developmental model. Teen Outreach, in particular, accomplishes this by identifying the developmental tasks faced by early adolescents and designing programming that facilitates developmental maturity around such tasks. Secondary prevention, in contrast, is more appropriate for older teens who are more likely to be sexually active and should focus more on reducing number of partners and effective use of contraception to prevent pregnancy and HIV. Both Reducing the Risk and Be Proud, Be Responsible accomplish this through targeted programming. One caveat of distinguishing between primary and secondary prevention, however, is the difficulty in forming groups that are at the same stage of sexual experience. Given that many programs take place in school settings, age is used as a proxy

for experience. Therefore, within a framework of either primary or secondary prevention, it may be important to include messages of abstinence as well as safe sexual practices.

The process of designing an intervention would also benefit from an interdisciplinary approach in which multiple perspectives (i.e., anthropology, public health, and education) inform the development of goals and programming (Kelly et al., 1993). Furthermore, collaboration within the community (Choi & Coates, 1994; Kelly et al., 1993) can serve to better define the problem, identify the most vulnerable populations and the issues most important to address, and the best approaches for addressing sensitive topics, with a mind toward cultural sensitivity. Be Proud, Be Responsible uses culturally sensitive materials such as videotapes with multiethnic casts to achieve this goal. Involvement of the community will also aid in implementation, to the extent that researchers rely on community members for recruitment and retainment. In doing so, development of a sense of community ownership can lead to future community implementation when the research team is no longer present. Although the extent of community involvement is unclear from the reports of the four programs presented here, Teen Outreach tailors its volunteer program to the needs of the particular community to ensure greater sensitivity to community needs.

The use of multiple formats and methods (e.g., small group exercises and peer educators) that will keep the attention of adolescents will likely increase effectiveness (Kirby & DiClemente, 1994). Basic knowledge and information training, in combination with problem solving, decision making, and behavioral skills training, can be combined to provide the tools for change on multiple levels (Kirby & DiClemente, 1994). Furthermore, time-intensive interventions (Choi & Coates, 1994) are most likely to be effective, especially when combined with periodic booster sessions. Reducing the Risk, Teen Outreach, and PSIP each use time-intensive, multiple-component approaches to increase effectiveness, although none use periodic booster sessions.

The importance of family influences during early adolescence suggests that a family-based intervention would be most effective for primary prevention because individual factors can be addressed within the context of the family. An approach that fosters family communication both in general and with respect to sex will allow parents to reinforce their own values concerning sexuality and pass

these values on to their children, as well as addressing issues of parental monitoring, supervision, and social support. Reducing the Risk attempts to include family by encouraging increased communication about sexuality with parents, although family members are not an integral part of the program. Recent initiatives funded by the National Institute of Mental Health (NIMH) will address these issues of family-based interventions and primary prevention in early and middle adolescents as well as other age groups with the NIMH Consortium of Family Grantees (W. Pequegnat, personal communication, July 23, 1996).

Peer influence is also a key concern to be addressed. Given the misperceptions that teens have about their peers' behavior, increasing awareness of actual attitudes and behaviors can serve to change community and peer norms for sexual behavior, including when and with whom it is appropriate to have sex and decreasing fears that teens may have about the consequences of suggesting condom use to their partners (Kelly et al., 1993). Reducing the Risk and PSIP are especially sensitive to peer influence. The latter uses older teen leaders as friends and mentors to illustrate that teens can postpone sex and still be respected in their peer group, whereas Reducing the Risk builds skills to resist peer influence and resets peer norms for sexual behavior.

Finally, evaluation of programming is of utmost importance to establishing which approaches and components are most effective in changing outcomes (Card et al., 1992; Choi & Coates, 1994; Kelly et al., 1993; Miller & Paikoff, 1992). All four of the programs described use some form of evaluation, but each has strengths and weaknesses. All four include control groups and pre- and posttest evaluations, although only Be Proud, Be Responsible and one trial of Teen Outreach are true experimental studies. To prevent the Hawthorne effect, Reducing the Risk and Be Proud, Be Responsible include alternative interventions for their control groups. Furthermore, only PSIP follows participants through the end of adolescence and uses external verification of outcomes.

In conclusion, if it is really the goal of *Healthy People 2000* (DHHS, 1991) to reduce the risk for adolescent pregnancy and HIV transmission, several criteria must be followed. First, prevention efforts must focus on reducing sexual risk taking through primary prevention (delaying the onset of sexual behavior) because preventive interventions have been much less successful with nonvirgins.

The only way to delay the onset of sexual intercourse is to start intervening early and focus on a broad range of variables. It is not sufficient to implement a program with 9- or 10-year-olds. Long-term follow-ups and booster sessions are required to address the changing nature of risk factors as youth progress developmentally through adolescence. Teen Outreach has demonstrated the specificity of intervention components at different ages, underscoring the need for developmental sensitivity in programming.

Second, primary prevention is not sufficient to reduce sexual risk taking. Secondary prevention efforts are also needed to ensure that sexually active adolescents are engaging in safer sex. Secondary preventive interventions need to focus on the contexts in which adolescents engage in risky behavior, and to address the barriers to safer sex. Cultural sensitivity is especially important in identifying such contexts and facilitating change. Finally, both primary and secondary prevention efforts need to be more methodologically rigorous. Experimental studies, including random assignment, pre- and posttest evaluation, and control groups who receive alternative programming, are imperative for valid evaluation. Only through carefully designed primary and secondary preventive intervention efforts can we hope to reach the goals of *Healthy People 2000.*

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